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(54) **ELECTRICAL ACTUATOR HAVING SMART MUSCLE WIRE**

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(57) **ABSTRACT**

An electrical actuator is characterized by applying electrical current directly to a smart wire to produce an output motion. The smart wire is looped around a drive member that is engaged with a moveable member, fixed at both ends to electrical terminals, and contains one or more coils between the electrical terminals and the drive member. Smart wire coils can either be wrapped around a reel in a helical fashion or moveably disposed in flexible tubing for support. Direct electrical current applied to the smart wire results in heating and contraction of the wire. Subsequent removal of electrical current allows the wire to cool and return to its original size and shape. The force and stroke of the electrical actuator can be tailored to meet specific requirements by changing wire diameter and length.